

What is claimed is:

1. A process of preparing an inorganic compound comprising the steps of:

(a) allowing at least an inorganic compounds (A) and an inorganic compound (B) which are different in solubility in water to react with each other in the presence of a reaction solvent with stirring to deposit an inorganic compound (C), while allowing at least a part of each of the compound (A) and compound (B) to exist as a solid and

(b) separating the inorganic compound (C) from the reaction solvent.

2. The process of claim 1, wherein the compound (A) exhibits a solubility in water of not more than 0.1 mol/l at 25 °C and the compound (B) exhibits a solubility in water of not less than 1.0 mol/l at 25 °C, and a solubility of the compound (C) at 25 °C being between the solubility in water of the compound (A) and that of the compound (B).

3. The process of claim 1, wherein the reaction solvent contains water in an amount of not more than 900 ml per mol of the compound (A) and the compound (B).

4. The process of claim 3, wherein said water is contained in an amount of not more than 380 ml per mol of the compound (A) and the compound (B).

5. The process of claim 3, wherein said water is contained in an amount of not more than 200 ml per mol of the compound (A) and the compound (B).

6. The process of claim 3, wherein the reaction solvent further contains at least an organic solvent and the compound (A), compound (B) and compound (C) each exhibit a solubility in the organic solvent lower than a solubility in water.

7. The process of claim 1, wherein in step (a), the reaction solvent is added into a reaction vessel and then a solid of the compound (A) and a solid of the compound (B) are each added into the reaction vessel, and after completion of addition, a part of each of the compound (A) and compound (B) exists as a solid in the reaction vessel.

8. The process of claim 1, wherein in step (a), a solid of one of the compound (A) and the compound (B) and the reaction solvent are mixed in the reaction vessel so that the a part of the one of the compound (A) and the compound (B) exist as a solid and then the other one of the compound (A) and the compound (B) is further added to the reaction vessel, and after completion of addition, a part of each of the compound (A) and compound (B) exists as a solid in the reaction vessel.

9. The process of claim 1, wherein in step (a), a solid of the compound (A) and a solid of the compound (B) are added into a reaction vessel and then the reaction solvent is further added to the reaction vessel with stirring, and after completion of addition, a part of each of the compound (A) and compound (B) exists as a solid in the reaction vessel.

10. The process of claim 7, wherein a solid of one of the compound (A) and the compound (B) is added into the reaction vessel containing the reaction solvent and then a solid of the other one of the compound (A) and the compound (B) is further added thereto.

11. The process of claim 7, wherein a solid of the compound (A) and a solid of the compound (B) are simultaneously added to the reaction vessel containing the reaction solvent.

12. The process of claim 7, wherein a solid of the compound (A) and a solid of the compound (B) which were previously mixed with each other are added into the reaction vessel containing the reaction solvent.

13. The process of claim 7, wherein one of the compound (A) and the compound (B) which was previously mixed with the reaction solvent and the other one of the compound (A) and the compound (B) are simultaneously added to the reaction vessel.

14. The process of claim 8, wherein one of the compound (A) and the compound (B) is added into the reaction vessel, then, the reaction solvent is added to the reaction vessel and the other one of the compound (A) and the compound (B) is further added thereto.

15. The process of claim 8, wherein one of the compound (A) and the compound (B) is added into the reaction vessel and the other one of the compound (A) and the compound (B) and the reaction solvent which were previously mixed with each other are added into the reaction vessel.

16. The process of claim 9, wherein the reaction solvent which was previously mixed with an inorganic compound.

17. The process of claim 1, wherein each of the compound (A) and the compound is mixed with the reaction solvent so that a part of the compound exists as a solid is added to the reaction vessel.

18. The process of claim 1, wherein the compound (C) is a zinc sulfide phosphor precursor.

19. The process of claim 1, wherein the compound (C) is a halophosphate phosphor precursor.

20. The process of claim 1, wherein the compound (C) is a phosphate phosphor precursor.

21. The process of claim 1, wherein the compound (C) is a silicate phosphor precursor.

22. The process of claim 1, wherein the compound (C) is a tungstate phosphor precursor.

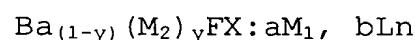
23. The process of claim 1, wherein the compound (C) is an aluminate phosphor precursor.

24. The process of claim 1, wherein the compound (C) is a rare earth activated alkali metal halide phosphor precursor.

25. The process of claim 1, wherein the compound (C) is a rare earth activated alkaline earth metal fluorohalide phosphor precursor.

26. The process of claim 25, wherein the rare earth activated alkaline earth metal fluorohalide phosphor precursor is represented by the following formula (1):

formula (1)



wherein X represents a halogen element selected from the group consisting of Cl, Br and I; M₂ represents an alkaline earth metal element selected from the group consisting of Be, Mg, Sr and Ca; M₁ represents an alkali metal element selected from the group consisting of Li, Na, K, Rb and Cs; Ln represents a rare earth element selected from the group consisting of Ce, Pr, Sm, Eu, Gd, Tb, Tm and Yb; y, a and b are 0 ≤ y ≤ 0.5, 0 ≤ a ≤ 0.05 and 0 < b ≤ 0.2.

27. The process of claim 25, wherein at least one of the compound (A) and the compound (B) is an inorganic halide compound.

28. The process of claim 25, wherein at least one of the compound (A) and the compound (B) is a barium halide.

29. The process of claim 25, wherein at least the compound (A) and the compound (B) are barium halides.

30. The process of claim 29, wherein the inorganic halide compound is BaF₂ or BaI₂.

31. The process of claim 30, wherein a solid of BaF_2 is added to the reaction solvent containing BaI_2 of at least 5.1 mol per liter of the reaction solvent.

32. The process of claim 30, wherein a solid of BaI_2 is added to the reaction solvent containing BaF_2 of at least 0.1 mol per liter of the reaction solvent.

33. The process of claim 30, wherein the inorganic halide is BaF_2 and BaI_2 , and an atomic ratio (f/I) of fluorine (f) contained in the BaF_2 to iodine (i) contained in the BaI_2 is 0.5 to 2.0.